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IS 2837-1 (1975): Porcelain crucibles and basins, Part 1:
Crucibles [CHD 10: Glassware]



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IS : 2837 (Part I) - 1975

(Reaffirmed 2008)

Indian Standard

**SPECIFICATION FOR
PORCELAIN CRUCIBLES AND BASINS**

PART I CRUCIBLES

(First Revision)

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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
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TO

**IS : 2837 (Part I)-1975 SPECIFICATION FOR
PORCELAIN CRUCIBLES AND BASINS**

PART I CRUCIBLES

(*First Revision*)

Alterations

(*Page 8, Table 2*)

a) *Column 4, heading* — Substitute the following for the existing heading:

' No. OF CRUCIBLES TO BE TESTED FOR
CHARACTERISTICS GIVEN IN **A-2.2**'

b) *Column 5, heading* — Substitute the following for the existing heading:

' No. OF CRUCIBLES TO BE TESTED FOR
REQUIREMENTS GIVEN IN **A-2.3**'

(*Page 8, clause **A-2.2***)

a) *Line 4* — Delete the words 'each of'.

b) *Line 6* — Substitute 'A fresh crucible' *for* 'A fresh set of crucibles'.

Indian Standard

SPECIFICATION FOR PORCELAIN CRUCIBLES AND BASINS

PART I CRUCIBLES

(*First Revision*)

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Indian Standard

SPECIFICATION FOR PORCELAIN CRUCIBLES AND BASINS

PART I CRUCIBLES

(*First Revision*)

0. FOREWORD

0.1 This Indian Standard (Part I) (First Revision) was adopted by the Indian Standards Institution on 14 August 1975, after the draft finalized by the Ceramicware Sectional Committee had been approved by the Chemical Division Council.

0.2 This standard was first published in 1964. However, in view of the experience gained during these years and the publication of ISO Recommendation 1772-1970 'Laboratory crucibles (porcelain and silica)', the Ceramicware Sectional Committee, responsible for the preparation of this standard, decided to revise it. The revised standard, is being published in two parts as follows:

Part I Crucibles, and

Part II Basins.

0.3 Some sizes of crucibles larger than those prescribed herein, may sometimes be needed for special purposes in laboratories. It is recommended that such larger sizes may be designed within the general framework of this standard; that is, by selecting a multiple of 10 mm as the nominal external top diameter and applying one of the three standard ratios in order to obtain the nominal height.

0.4 In the formulation of this standard, assistance has been derived from ISO/R 1772-1970 'Laboratory crucibles (porcelain and silica)', issued by the International Organization for Standardization (ISO).

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS: 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

*Rules for rounding off numerical values (*revised*).

1. SCOPE

1.1 This standard (Part I) prescribes requirements and methods of sampling and test for porcelain crucibles for general laboratory purposes.

NOTE — The sizes and dimensions prescribed in this standard may also be applied to unglazed porcelain crucibles and lids.

2. TERMINOLOGY

2.1 For the purpose of this standard, the definitions given in IS : 2781-1964* shall apply.

3. TYPES

3.1 Porcelain crucibles shall be of three types as follows:

Type 1 — Low form, based on a height/diameter ratio of 0.63 (see Fig. 1A),

Type 2 — Medium form, based on a height/diameter ratio of 0.8 (see Fig. 1B), and

Type 3 — Tall form, based on a height/diameter ratio of 1.25 (see Fig. 1C).

4. SIZE DESIGNATION

4.1 Crucibles shall be designated by the type and the nominal external diameter at the rim, separated by an oblique.

Example:

A porcelain crucible of Type 1 (low form) having a nominal external diameter 30 mm at the rim, shall be designated as 1/30.

5. REQUIREMENTS

5.1 Material — Crucibles and their lids shall be vitrified porcelain with all surfaces glazed except for those used for support during firing. They shall satisfy requirements in respect of:

- a) porosity of body and imperfections of glaze,
- b) resistance to heat and sudden change of temperature,
- c) resistance of glaze to high temperature,
- d) constancy of mass on heating, and
- e) resistance of glaze to acids and alkalis

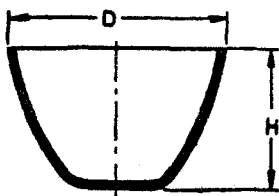
when tested in accordance with the methods prescribed in IS : 2836-1974†.

5.2 Construction

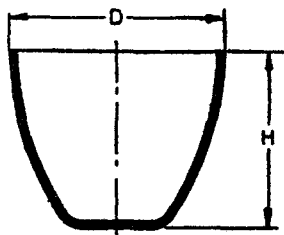
5.2.1 Patterns — Crucibles and their lids shall conform to the shapes given in Fig. 1 and 2.

*Glossary of terms relating to ceramicware.

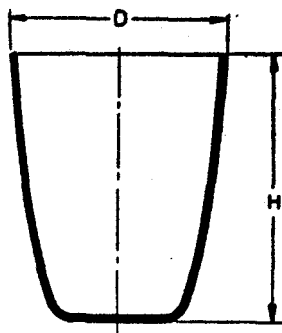
†Methods of test and quality requirements for porcelain laboratory apparatus (first revision).



1A Low Form Crucible (Type 1)



1B Medium Form Crucible (Type 2)



1C Tall Form Crucible (Type 3)

FIG. 1 PORCELAIN CRUCIBLES

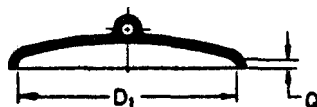


FIG. 2 LID FOR PORCELAIN CRUCIBLE

5.2.2 Stability — The crucibles shall stand upright without rocking or spinning when placed on a level surface.

5.2.3 Provision for Lifting Lids — At the centre of the upper surface of the domed lids there shall be a ring or a protuberance with a hole in it so that the lid may be conveniently lifted with crucible tongs or supported by a piece of wire.

5.3 Series of Sizes and Dimensions

5.3.1 Series of Sizes — The series of sizes of crucibles shall be as given in col 3 of Table 1.

NOTE — No values of nominal capacity are specified, but manufacturers may state these for the information of user on the basis that nominal capacity is equal to 75 percent of overflow capacity.

5.3.2 Dimensions — The crucibles shall comply with the dimensional requirements given in Table 1.

TABLE 1 SERIES OF SIZES AND DIMENSIONS OF CRUCIBLES

SL No.	TYPE OF CRUCIBLE	SERIES OF SIZES (DESIGNATION)	EXTERNAL DIA-METER, D		EXTERNAL HEIGHT*, H	
			Nominal	Tolerance†	Nominal	Tolerance†
(1)	(2)	(3)	(4)	(5)	(6)	(7)
			mm	± mm	mm	± mm
i)	Type 1 Low form ($H/D = 0.63$)	1/30	30	1.5	19	1.0
ii)	"	1/35	35	1.5	22	1.0
iii)	"	1/40	40	1.5	25	1.0
iv)	"	1/45	45	2.0	28	1.0
v)	"	1/50	50	2.0	32	1.5
vi)	"	1/60	60	2.5	38	1.5
vii)	"	1/70	70	2.5	44	2.0
viii)	Type 2 Medium form ($H/D = 0.8$)	2/35	35	1.5	28	1.0
ix)	"	2/40	40	1.5	32	1.5
x)	"	2/45	45	2.0	36	1.5
xi)	"	2/50	50	2.0	40	1.5
xii)	"	2/60	60	2.5	48	2.0
xiii)	"	2/70	70	2.5	56	2.0
xiv)	Type 3 Tall form ($H/D = 1.25$)	3/30	30	1.5	38	1.5
xv)	"	3/35	35	1.5	44	2.0
xvi)	"	3/40	40	1.5	50	2.0
xvii)	"	3/45	45	2.0	56	2.5
xviii)	"	3/50	50	2.0	62	2.5
xix)	"	3/60	60	2.5	75	3.0

*The nominal height has been obtained by applying the appropriate ratio H/D to the nominal diameter and then rounding to whole millimetres.

†The tolerances have been obtained by calculating ± 3.5 percent of the nominal dimensions and rounding outwards to half millimetres.

5.3.2.1 Lids — The internal diameter D_1 (see Fig. 2) of the lids shall be at least 2 mm greater than the maximum external diameter D of the crucibles with which they are intended to be used. The internal depth Q of the rim shall be at least 2 mm.

6. MARKING AND PACKING

6.1 Marking — The crucibles and lids shall be marked suitably with the following:

- a) Manufacturer's name or recognized trade-mark, if any; and
- b) Designation of the crucibles.

6.1.1 The crucibles and lids may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

6.2 Packing — Crucibles and lids shall be packed as agreed to between the purchaser and the supplier.

7. SAMPLING

7.1 The method of drawing representative samples shall be as prescribed in Appendix A.

APPENDIX A

(Clause 7.1)

SAMPLING OF PORCELAIN CRUCIBLES

A-1. SCALE OF SAMPLING

A-1.1 Lot — All the crucibles of the same type produced under essentially similar conditions of manufacture and offered for inspection at the same time, in a single consignment, shall be grouped together to constitute a lot.

A-1.2 The conformity of crucibles to the requirements of this specification shall be ascertained for each lot separately. The number of crucibles to be sampled from each lot shall depend on the size of the lot and shall be in accordance with col 1 and 2 of Table 2.

TABLE 2 NUMBER OF SAMPLES FOR TESTING

(Clauses A-1.2, A-2.1, A-2.2 and A-2.3)

No. OF CRUCIBLES IN THE LOT, <i>N</i>	No. OF CRUCIBLES IN THE SAMPLE, <i>n</i>	PERMISSIBLE No. OF DEFECTIVES IN MATERIAL, SHAPE AND DIMENSIONS AS GIVEN IN A-2.1	No. OF CRUCIBLES TO BE TESTED FOR EACH OF THE CHARACTERISTICS GIVEN IN A-2.2	No. OF CRUCIBLES TO BE TESTED FOR A-2.3
(1)	(2)	(3)	(4)	(5)
Up to 50	8	0	4	3
51 to 100	13	1	8	3
101 „ 500	20	2	12	3
501 „ 3 000	32	3	20	6
3 001 and above	50	5	32	6

A-1.2.1 These crucibles shall be selected at random from the lot. In order to ensure the randomness of selection, procedures given in IS : 4905-1968* may be followed.

A-2. NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

A-2.1 Material, Shape and Dimensions — Each of the crucibles selected in A-1.2 shall be examined for these requirements. Any crucible failing to meet any of these requirements shall be considered as defective. The number of defective crucibles in the sample shall not exceed the permissible number of defectives given in col 3 of Table 2, otherwise the lot shall be considered as not conforming to these requirements.

A-2.2 Porosity of Body and Imperfections of Glaze, Resistance to Heat and Sudden Change of Temperature, Resistance of Glaze to High Temperature and Constancy of Mass on Heating — Tests for each of these requirements shall be conducted on the number of crucibles given in col 4 of Table 2 which shall be selected at random from those found satisfactory in A-2.1. A fresh set of crucibles shall be used for each test. The lot shall be considered as conforming to these requirements if none of the crucibles fails in any of the tests.

*Methods for random sampling.

A-2.3 Resistance of Glaze to Acids and Alkalis — Test for these requirements shall be conducted on the number of crucibles as indicated in col 5 of Table 2. These crucibles shall be selected at random from those already tested and found satisfactory in **A-2.1**. These crucibles shall be equally divided for testing resistance of glaze to the following:

- a) Hydrochloric acid,
- b) Sodium carbonate, and
- c) Sodium hydroxide.

The lot shall be considered as conforming to these requirements, if none of the crucibles fails in any of the tests.

A-2.4 The lot shall be declared as conforming to the requirements of this specification if **A-2.1**, **A-2.2** and **A-2.3** are satisfied.



INDIAN STANDARDS INSTITUTION

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002

Telephones : 331 01 31, 331 13 75

Telegrams : Manaksanstha

(Common to all offices)

Regional Offices :

Telephone

*Western : Manakalaya, E9 MIDC, Marol, Andheri (East),
BOMBAY 400093 6 32 92 95

†Eastern : 1/14 C. I. T. Scheme VII M, V. I. P. Road,
Maniktola, CALCUTTA 700054 36 24 99

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Northern : B69 Phase VII, Industrial Focal Point,
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2 63 49

'F' Block Unity Bldg, Narasimharaja Square,
BANGALORE 560002 22 48 05

Gangotri Complex, Bhadbhada Road, T. T. Nagar,
BHOPAL 462003 6 27 16

22E Kalpana Area, BHUBANESHWAR 751014 5 36 27

5-8-58C L. N. Gupta Marg, HYDERABAD 500001 22 10 83

R14 Yudhister Marg, C Scheme, JAIPUR 302005 6 98 32

117/418 B Sarvodaya Nagar, KANPUR 208005 4 72 92

Patliputra Industrial Estate, PATNA 800013 6 23 05

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